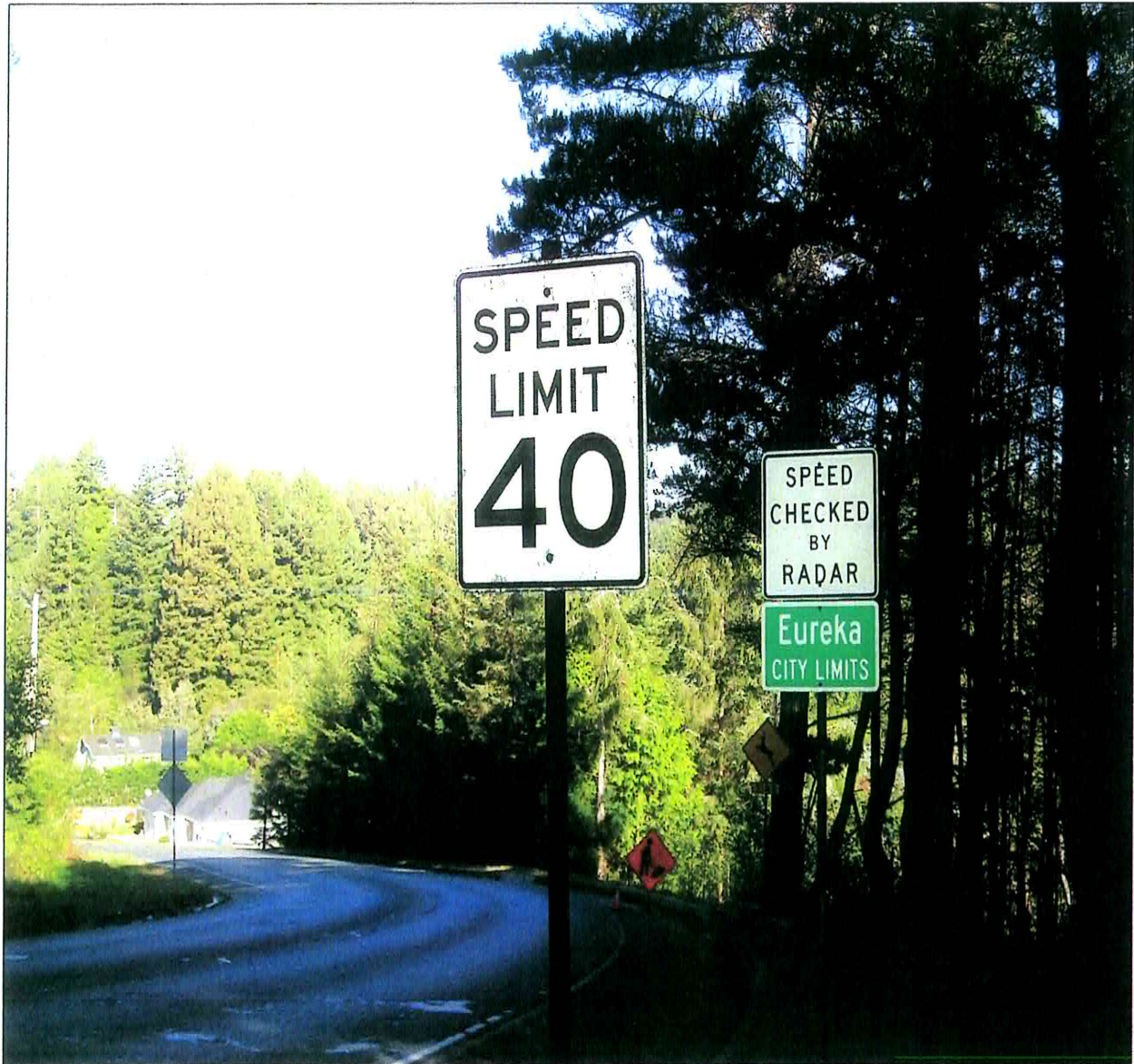


ENGINEERING AND TRAFFIC SURVEY FOR SPEED ZONING



December 2009

Prepared by the Traffic Division
of the Engineering Department
City of Eureka, California



CITY OF EUREKA RADAR SPEED SURVEY

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INTRODUCTION

SPEED LIMITS

WHAT THE LAW REQUIRES

The California Vehicle Code requires that speed zoning be based on a measurement of the prevailing speed of traffic and careful assessment of hazards of an unusual nature. The language of the Code reflects the sensible point of view that speed zoning, like other types of traffic control, should be based on traffic **conditions** and not be simply a hurried response to a traffic **event**.

HOW SPEED LIMITS ARE SET

Speed limits established by California Vehicle Code are:

- 15 mph in alleys.
- 15 mph at railroad crossings.
- 25 mph in school zones.
- 25 mph in a residence or business district.
- 25 mph when passing a senior citizens facility.

Other streets that are not defined as a local street or road require an engineering and traffic survey to determine the speed limit.

An engineering and traffic survey is conducted using a sampling of the speeds of 100 free-flowing vehicles. The highest speed that 85% of the vehicles are traveling is determined by the survey. This is called the 85th percentile speed. This 85th percentile speed is used as a guideline in determining the speed limit.

Factors such as land use, pedestrian activity, accident history and curves in the road are also considered and can account for speed limits set below the 85th percentile speed.

ENGINEERING AND TRAFFIC SURVEY

The California Vehicle Code authorizes local authorities to increase or decrease certain speed limits on their highways on the basis of an "engineering and traffic survey." This survey is defined in Section 627 of the Vehicle Code:

Engineering and Traffic Survey

CVC 627. (a) "Engineering and traffic survey," as used in this code, means a survey of highway and traffic conditions in accordance with methods determined by the Department of Transportation for use by state and local authorities.

(b) An engineering and traffic survey shall include, among other requirements deemed necessary by the department, consideration of all of the following:

(1) Prevailing speeds as determined by traffic engineering measurements.

(2) Accident records.

(3) Highway, traffic, and roadside conditions not readily apparent to the driver.

(C) When conducting an engineering and traffic survey, local authorities, in addition to the factors set forth in paragraphs (1) to (3) inclusive, of subdivision (b) may consider all of the following:

(1) Residential density, if any of the following conditions exist on the particular portion of highway and the property contiguous thereto, other than a business district:

(A) Upon one side of the highway, within a distance of a quarter of a mile, the contiguous property fronting thereon is occupied by 13 or more separate dwelling houses or business structures.

(B) Upon both sides of the highway, collectively, within a distance of a quarter of a mile, the contiguous property fronting thereon is occupied by 16 or more separate dwelling houses or business structures.

(C) the portion of highway is longer than one-quarter of a mile, but has the ratio of separate dwelling houses or business structures to the length of the highway described in either subparagraph (A) or (B).

(2) Pedestrian and bicyclist safety.

In almost every case, speed zoning is based largely on the results of the measurement of prevailing speeds. These speeds are determined by a series of "spot speed" studies - a check of the speeds of vehicles passing a given point.

This report contains sufficient information to document that the conditions of the latest edition of the California Vehicle Code Section 627 have been satisfied and that other conditions not readily apparent to a motorist are properly identified.

In accordance with the requirements of the California Vehicle Code stating that an Engineering Traffic Survey must be conducted every 5 years on streets under radar surveillance, the City of Eureka Engineering Department submits this report.

STREETS SURVEYED

B Street	7 th Street to Harris Street
Buhne Street	Fairfield Street to Harrison Avenue
California Street	7 th Street to Harris Street
Campton Road	Oak Street to South City Limits
Central Avenue	Harris Street to South Avenue
Dolbeer Street	Harris Street to Hemlock Street
E Street	7 th Street to South City Limits
F Street	Harris Street to South City Limits
Fairfield Street	Wabash Avenue to Harris Street
Fairway Drive	F Street to South City Limits
14 th Street	Broadway to West Avenue
Glen Street	Harris Street to Allard Avenue
H Street	7 th Street to Oak Street
Harris Street	Broadway to Harrison Avenue
Harrison Avenue	Myrtle Avenue to Harris Street
Henderson Street	Broadway to S Street
Highland Avenue	Broadway to Glen Street
Hodgson Street	F Street to W Street
I Street	7 th Street to Harris Street
J Street	7 th Street to Harris Street
M Street	7 th Street to 14 th Street
McCullens Avenue	Broadway to Glen Street
McFarlan Street	Myrtle Avenue to Hillside Drive

Myrtle Avenue	5 th Street to Harrison Avenue
S Street	County Lane to Harris Street
7 th Street	Broadway to Myrtle Avenue
6 th Street	Broadway to Myrtle Avenue
Union Street	Wabash Avenue to South City Limits
Wabash Avenue	Broadway to H Street
West Avenue	5 th Street to County Lane

SECTION I

SUMMARY OF RADAR SURVEY RESULTS

Shown below are the streets surveyed, boundaries of each segment, present speed limits, and the recommended speed limit based on the use of radar. Streets surveyed include arterial and collector streets as shown on the 2007 Functional Classification map included on page 8 of this survey and as required by Section 40802 of the California Vehicle Code.

There were a total of 73 street segments monitored for this survey. At those locations where the critical (85th percentile) speed for the opposing lanes of traffic indicate different speed limits, the data was combined and then the composite speed was used.

There are 3 street segments where the speed limit would need to be raised in order to utilize radar enforcement. These locations are listed below:

Street Name	Boundaries	Present Speed Limit MPH	Recommended Speed Limit MPH
Fairway Drive	F to Lundblade	30	35
	Lundblade to South City Limits	30	35
McFarlan Street	Myrtle to Hillside	25	30

There are 67 street segments where the speed limit can remain as posted and utilize radar enforcement. These locations are listed below:

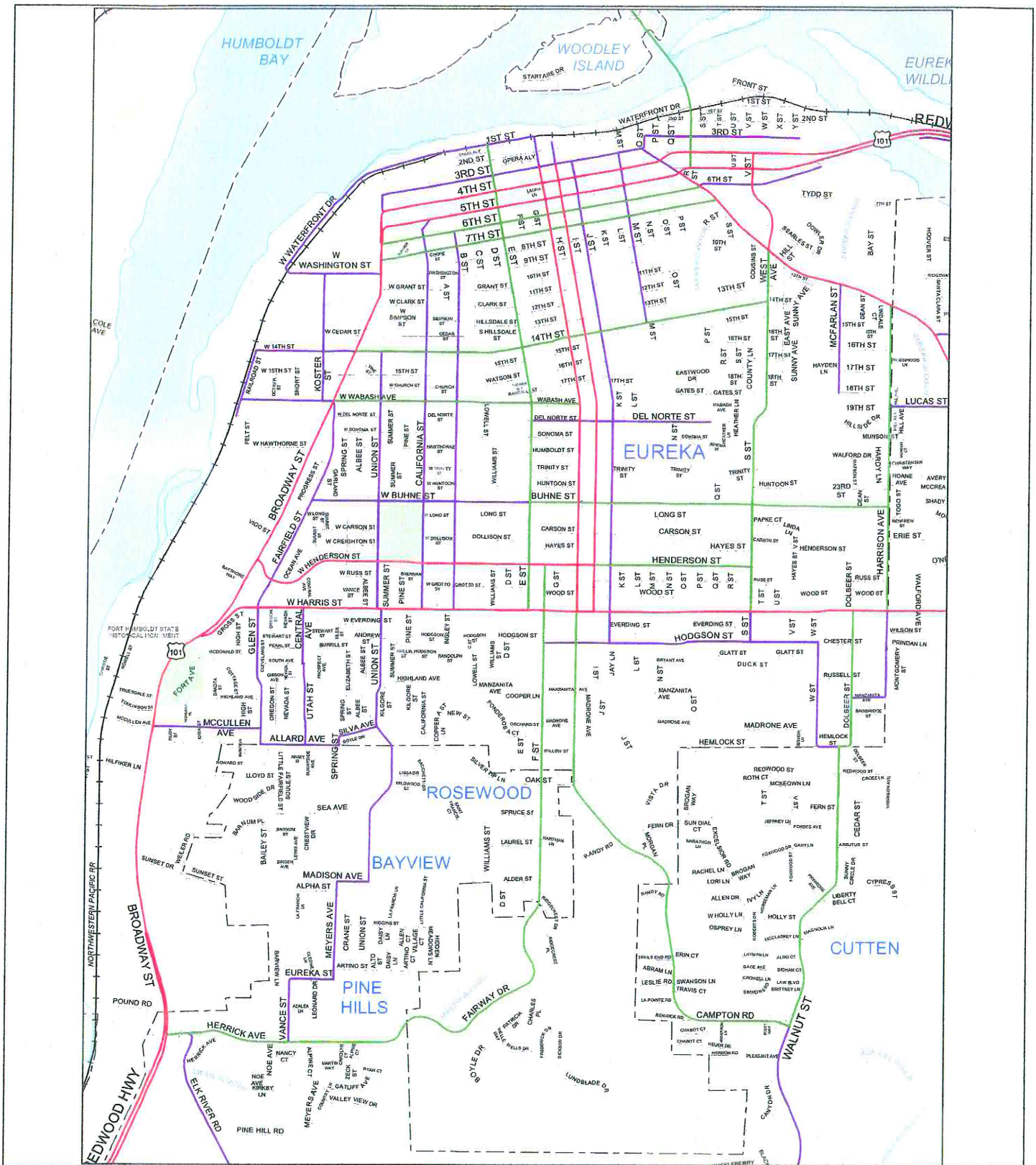
Street Name	Boundaries	Present Speed Limit MPH	Recommended Speed Limit MPH
B Street	7 th to Wabash	30	30
	Wabash to Buhne	30	30
	Buhne to Harris	30	30
Buhne Street	Fairfield to E	30	30
	E to J	30	30
	J to Harrison	30	30
California Street	7 th to Wabash	30	30
	Wabash to Buhne	30	30
	Buhne to Harris	30	30
Campton Road	Oak to South City Limits	40	40
Central Avenue	Harris to South Ave.	30	30
Dolbeer Street	Harris to Hemlock	30	30

E Street	7 th to 14 th	30	30
	14 th to Henderson	30	30
	Henderson to Harris	25	25
	Harris to Orchard	30	30
	Orchard to South City Limits	30	30
F Street	Harris to Orchard	30	30
	Orchard to South City Limits	30	30
Fairfield Street	Wabash to Buhne	30	30
	Buhne to Harris	30	30
14 th Street	H to M	30	30
	M to West	30	30
Glen Street	Harris to Gibson	30	30
	Gibson to Allard	30	25
H Street	7 th to 14 th	35	35
	14 th to Buhne	35	35
	Buhne to Harris	35	35
	Harris to Manzanita	35	35
	Manzanita to Oak	35	35
Harris Street	Broadway to California	30	30
	California to I	30	30
	I to R	30	30
	R to Harrison	30	30
Harrison Avenue	Myrtle to 18 th	30	30
	18 th to Buhne	30	30
	Buhne to Harris	30	30
Henderson Street	Broadway to California	30	30
	California to I	30	30
	I to M	30	30
	M to S	30	30
Highland Avenue	Broadway to Glen	25	25
Hodgson Street	F to N	30	30
	N to W	30	30
I Street	7 th to 14 th	35	35
	14 th to Buhne	35	35
	Buhne to Harris	35	35
J Street	7 th to 14 th	30	30
	14 th to Buhne	30	30
	Buhne to Harris	30	30
M Street	7 th to 14 th	30	30
McCullens Avenue	Broadway to Glen	30	30

Myrtle Avenue	5 th to West	35	35
	West to Harrison	35	35
S Street	County Ln. to Buhne	30	30
	Buhne to Harris	30	30
7 th Street	Broadway to J	30	30
	J to O	30	30
	O to Myrtle	30	30
6 th Street	Broadway to J	25	25
	J to O	25	25
	O to Myrtle	30	30
Union Street	Wabash to Harris	30	30
	Harris to South City Limits	30	30
Wabash Avenue	Broadway to H	30	30
West Avenue	5 th to Myrtle	25	25
	Myrtle to 14 th	30	30
	14 th to County Lane	30	30

There are 2 street segments where the speed limit can be lowered and still utilize radar enforcement. These locations are listed below:

14 th Street	Broadway to California	30	25
	California to H	30	25



FUNCTIONAL CLASSIFICATION SYSTEM

URBAN		RURAL
INTERSTATE 11		01 INTERSTATE
OTHER FWY OR EXPWY 12		02 OTHER PRINCIPAL ARTERIAL
OTHER PRINCIPAL ARTERIAL 14		06 MINOR ARTERIAL
MINOR ARTERIAL 16		07 MAJOR COLLECTOR
COLLECTOR 17		08 MINOR COLLECTOR
LOCAL 19		09 LOCAL

APPROVED Date: 02/20/07
 FEDERAL HIGHWAY ADMINISTRATION
Scott K. Williams
 FOR: GENE FONG
 DIVISION ADMINISTRATOR



Current Speed Limits Map



Legend
2009 Radar Speed Survey
Current Speed Limits

MPH

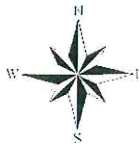
25

30

35

40

Note: All other City streets
are 25 MPH



Recommended Changes In Speed Limit Map



Legend

Use of Radar

— Radar currently used, no increase in speed limit recommended

— Radar not currently used, can be used with no increase in speed limit

— Radar not currently used, speed limit increase required to use radar

— Radar currently used, speed limit can be decreased 5 mph and still use radar

All other City streets are 25 MPH

SECTION II

SURVEY RESULTS AND RECOMMENDATIONS

This section is a summary of the street segments surveyed and compares the critical speed (85% Speed) obtained with the speed limit presently being enforced and provides recommendations for revising speed limits and the basis for these recommendations.

The appendix covering "Field Survey Data" provides the necessary backup for this section.

Several short sections of streets have had the speed limit raised or lowered as allowed by the California Manual on Uniform Traffic Control Devices and the California Vehicle Code. The justification for recommended changes from the 85th percentile speed is noted with each street section and is shown below.

Justification for reducing or increasing speed limit on individual street segments:

1. Recommended speed lowered 5 mph based on residential or business density. (CVC 627)
2. Recommended speed lowered 5 mph based on pedestrian and bicycle safety. (CVC 627)
3. Recommend speed limit lowered to conform to larger portion of street.
4. Recommended speed limit rose to conform to larger portion of street.
5. Recommended speed limit lowered to maintain uniformity on a boundary street. Jurisdiction is shared with County of Humboldt.
6. Recommended speed limit has been lowered as street borders school or park with several school crosswalks and/or high pedestrian activity.
7. Recommended speed limit has been lowered as street borders "senior citizens" facility.
8. Recommended speed limit raised on basis of cumulative speeds.

2009 RADAR SPEED SURVEY

NO.	LOCATION OF SURVEY	SURVEY DATE	BOUNDARIES	DIRECTION	85 TH % SPEED			SPEED LIMIT		Coll.* 2008	NOTES
					1999	2004	2009	EXISTING	TO USE RADAR		
1	B - Simpson to Cedar	8/26/2008	B - 7 th to Wabash	North	30.9	33	33.0	30	30	3	1
				South	31.5	31.8	34.3	30	30		1
2	B - Sonoma to Del Norte	9/10/2008	B - Wabash to Buhne	North	32.4	31	33.4	30	30	3	1
				South	35.5	30.2	32.5	30	30		
3	B - Dollison to Long	8/14/2008	B - Buhne to Harris	North	34.3	34.9	33.4	30	30	2	1
				South	34.1	33	33.8	30	30		1
4	Buhne - Pine to Summer	8/14/2008	Buhne-Fairfield to E	East	32.4	34.2	33.7	30	30	15	1
				West	31.8	33	33.2	30	30		1
5	Buhne - F to G	8/14/2008	Buhne - E to J	East	32	31.6	32.4	30	30	13	
				West	30	32	31.7	30	30		
6	Buhne - N to O	8/12/2008	Buhne - J to Harrison	East	35.5	33.8	36.6	30	30	12	1
				West	35.8	35	35.6	30	30		1
7	California - Clark to Grant	9/10/2008	California - 7 th to Wabash	North	32	31.2	32.2	30	30	11	
				South	35.7	31	32.3	30	30		
8	California - Del Norte to Sonoma	10/16/2008	California - Wabash to Buhne	North	31.8	30.9	30.4	30	30	6	
				South	31.9	31.9	31.3	30	30		
9	California - Long to Dollison	7/24/2008	California - Buhne to Harris	North	32.7	34.2	33.6	30	30	5	1
				South	34	32.9	32.6	30	30		1
10	Campton - Fern to Oak	8/19/2008	Campton - Oak to S. City Limits	North	44	41.2	40.0	40	40	3	
				South	41	41.7	37.6	40	40		
11	Central - Pearl to Harris	7/24/2008	Central - Harris to South	North	32.9	33.1	34.0	30	30	1	1
				South	35.5	33.2	34.6	30	30		1
12	Dolbeer - Bainbridge to Manzanita	8/11/2008	Dolbeer - Harris to Hemlock	North	37.3	34.3	35.0	30	30	7	1
				South	35.3	33	34.0	30	30		1
13	E - 8 th to 9 th	9/18/2008	E - 7 th to 14 th	North	32.3	31.5	31.5	30	30	6	
				South	33.4	31.5	31.4	30	30		
14	E - Watson to 15 th	8/20/2008	E - 14 th to Henderson	North	33.3	32	33.3	30	30	4	1
				South	33.8	33	34.1	30	30		1
15*	E - Buhne to Huntoon	8/14/2008	E - Henderson to Harris	North	29.3	31	30.6	30	25	10	1
				South	31.4	30.2	32.3	30	25		1
16	E - Harris to Hodgson	7/29/2008	E - Harris to Orchard	North	35.6	34.9	34.9	30	30	5	1
				South	34.3	34	33.8	30	30		1
17	E - Willow to Orchard	7/30/2008	E - Orchard to S. City Limits	North	36.4	34.8	36.2	30	30	0	1
				South	36.3	34.5	35.3	30	30		1
18	F - Manzanita to Hodgson	7/29/2008	F - Harris to Orchard	North	36.5	35.8	35.2	30	30	7	1
				South	34.6	36	36.0	30	30		1

* Only the portion of "E" Street from Henderson to Harris will be signed at 25mph

NO.	LOCATION OF SURVEY	SURVEY DATE	BOUNDARIES	DIRECTION	85 TH % SPEED			SPEED LIMIT		Coll.*	NOTES
					1999	2004	2009	EXISTING	TO USE RADAR		
19	F - Willow to Madrone	7/30/2008	F - Orchard to South City Limits	North	36.7	36.1	36.9	30	30	3	1
				South	37.5	35.5	36.8	30	30		1
20	Fairfield - Buhne to Progress	8/15/2008	Fairfield - Wabash to Buhne	North	37	33.7	34.0	30	30	8	1
				South	34.9	33	33.0	30	30		1
21	Fairfield - Henderson to Creighton	8/15/2008	Fairfield - Buhne to Harris	North	36.3	33.7	34.5	30	30	8	1
				South	35	34.2	35.3	30	30		1
22	Fairway - Ridgecrest to Lundblade	8/18/2008	Fairway - F to Lundblade	North	41.1	38.9	39.6	30	35	2	2
				South	41.3	40	43.0	30	35		2,3
23	Fairway - Lundblade to City Limits	8/18/2008	Fairway - Lundblade to City Limits	North	38	38.4	37.8	30	35	2	2
				South	36.4	38	39.0	30	35		2
24	14th - Summer to Pine	8/24/2008	14th - Broadway to California	East	30.6	29.2	30.0	30	25	2	1
				West	31.1	30.2	29.7	30	25		1
25	14th - F to G	8/19/2008	14 th - California to H	East	30.9	31	32.9	30	25	10	1,3
				West	30.3	31.7	30.6	30	25		1
26	14th - K to L	9/2/2008	14 th - H to M	East	34	34.4	34.7	30	30	8	1
				West	33.6	34	35.0	30	30		1
27	14th - R to S	9/2/2008	14 th - M to West	East	36.4	35.6	36.0	30	30	4	1
				West	35.6	34.2	34.2	30	30		1
28	Glen - Thomas to McDonald	7/28/2008	Glen - Harris to Gibson	North	35.9	36.7	36.5	30	30	4	1
				South	37.7	36.4	35.8	30	30		1
29	Glen - Highland to McCullens	7/25/2008	Glen - Gibson to Allard	North	33.5	30.7	32.6	30	30	6	1
				South	32.5	30.4	31.6	30	30		1
30	H - 8th to 9th	9/12/2008	H - 7 th to 14 th	South	35.1	36.1	36.9	35	35	5	
31	H - 16th to 17th	8/20/2008	H - 14 th to Buhne	South	39.4	36.7	38.8	35	35	12	1
32	H - Buhne to Carson	8/13/2008	H - Buhne to Harris	South	35.5	36.3	38.2	35	35	12	1
33	H - Manzanita to Hodgson	8/1/2008	H - Harris to Manzanita	North	40	37.5	38.6	35	35	15	1
				South	37	38.2	38.8	35	35		1
34	H - Willow to Madrone	7/30/2008	H - Manzanita to Oak	North	42	39.3	39.9	35	35	5	1
				South	40.7	36.9	38.4	35	35		1
35	Harris - Central to Prospect	7/29/2008	Harris - Broadway to California	East	35	33.2	35.6	30	30	17	1
36	Harris - A to B	7/29/2008	Harris - California to I	East	34.6	34.2	36.8	30	30	22	1
37	Harris - J to K	8/1/2008	Harris - I to R	East	32.9	32.7	33.2	30	30	7	1
				West	33.3	33.8	32.2	30	30		1
38	Harris - T to U (2009 U to V)	8/11/2008	Harris- R to Harrison	East	32.8	31.7	34.9	30	30	8	1
				West	32.5	32.7	35.0	30	30		1

NO.	LOCATION OF SURVEY	SURVEY DATE	BOUNDARIES	DIRECTION	85 TH % SPEED			SPEED LIMIT		Coll.*	NOTES
					1999	2004	2009	EXISTING	TO USE RADAR		
39	Harrison - 17 th to 18 th	9/24/2008	Harrison - Myrtle to 18th	North	37.9	36.7	34.4	30	30	1	1
				South	37.5	37.6	36.6	30	30		1,3
40	Harrison - Christenson to Roane	12/12/2008	Harrison 18 th to Buhne	North	33.5	31	31.2	30	30	2	
				South	32.6	33	29.3	30	30		
41	Harrison - Erie to Russ	8/11/2008	Harrison - Buhne to Harris	North	34.2	32	34.0	30	30	2	1
				South	32.9	31	33.9	30	30		1
42	Henderson - Spring to Central	8/14/2008	Henderson-Broadway to California	West	36	35.1	37.0	30	30	11	1,2
43	Henderson - William to Lowell	8/15/2008	Henderson - California to I	West	34.8	32.6	33.7	30	30	15	1,2
44	Henderson - J to K	8/18/2008	Henderson - I to M	East	32.2	33	33.5	30	30	5	1
				West	32	33.6	33.9	30	30		1
45	Henderson - Q to R	8/18/2008	Henderson - M to S	East	34.8	34.5	36.1	30	30	2	1
				West	34.8	33.9	35	30	30		1
46	Highland - Iowa to Dakota	7/25/2008	Highland - Broadway to Glen	East	33.5	33.1	32.2	25	25	4	1
				West	33	33	32.8	25	25		1,6
47	Hodgson - M to N	8/1/2008	Hodgson - F to N	East	35.8	33.8	33.9	30	30	8	1
				West	35	34.3	33.3	30	30		1
48	Hodgson - U to V	8/1/2008	Hodgson - N to W	East	33	35	35.5	30	30	3	1,3
				West	32.9	33.5	32.8	30	30		1
49	I - 8 th to 9 th	9/12/2008	I - 7 th to 14 th	North 1-W	35.2	34.8	36.6	35	35	11	
50	I - 16 th to 17 th	8/20/2008	I - 14 th to Buhne	North 1-W	38.5	37	40.6	35	35	11	1
51	I - Buhne to Carson	8/13/2008	I - Buhne to Harris	North 1-W	35.9	38.1	37.4	35	35	10	
52	J - 8 th to 9 th	9/17/2008	J - 7 th to 14 th	North	35.2	34.3	33.9	30	30	6	1
				South	34.5	33.9	34.0	30	30		1
53	J - 16 th to 17 th	8/20/2008	J - 14 th to Buhne	North	33	33.6	35.0	30	30	5	1
				South	33	33.5	34.9	30	30		1
54	J - Buhne to Carson	8/14/2008	J - Buhne to Harris	North	32.5	34.7	35.5	30	30	7	1
				South	34.9	33.2	35.5	30	30		1
55	M - 10 th to 11 th	9/18/2008	M - 7 th to 14 th	North	31.6	31	33.3	30	30	2	1
				South	30.4	30.6	32.7	30	30		1
56	McCullens - Rudy to Iowa	7/25/2008	McCullens - Broadway to Glen	East	32.2	33	34.6	30	30	5	1
				West	35.1	33.8	37.5	30	30		1
57	McFarlan - 16 th to 17 th	2/18/2009	McFarlan - Myrtle to Hillside	North	31.9		35.4	25	30	0	1
				South	34.3		33.5	25	30		1
58	Myrtle - 7 th to 8 th	11/19/2008	Myrtle - 5 th to West	East	37.4	38.5	38.6	35	35	2	1
				West	37.8	37.7	37.0	35	35		

NO.	LOCATION OF SURVEY	SURVEY DATE	BOUNDARIES	DIRECTION	85 th % SPEED			SPEED LIMIT		Coll.*	NOTES
					1999	2004	2009	EXISTING	TO USE RADAR		
59	Myrtle - Sunny to McFarlan	8/21/2008	Myrtle - West to Harrison	East	39.7	42	38.9	35	35	4	1
				West	37.9	39	38.0	35	35		1
60	S - Huntoon to Trinity	8/12/2008	S - County Ln to Buhne	North	35.6	33	36.9	30	30	3	1
				South	33.6	33	34.8	30	30		1
61	S - Papke to Hayes	8/12/2008	S - Buhne to Harris	North	32.9	34.6	34.3	30	30	8	1
				South	35.7	33.9	35.3	30	30		1
62	7 th - B to C	9/26/2008	7 th - Broadway to J	East 1-W	33.8	29.7	33.5	30	30	16	1,2
63	7 th - J to K	9/26/2008	7 th - J to O	East 1-W	34	33.7	33.4	30	30	7	1,2
64	7 th - P to Myrtle	8/8/2008	7 th O to Myrtle	East 1-W	35	36.6	37.0	30	30	0	1,2
65	6 th - B to C	9/24/2008	6 th - Broadway to J	West 1-W	31.9	33.2	33.0	25	25	16	1,2
66	6 th - J to K	9/24/2008	6 th - J to O	West 1-W	31.5	30.8	32.0	30	25	3	
67	6 th - P to Myrtle	9/24/2008	6 th - O to Myrtle	West 1-W	34	33.3	33.8	30	30	2	1,2
68	Union - Carson to Creighton	8/14/2008	Union - Wabash to Harris	North	32.8	32.4	33.4	30	30	5	1
				South	34.3	32.5	33.3	30	30		1
69	Union - Highland to Andrew	7/29/2008	Union - Harris to South City Limits	North	35.5	32	34.5	30	30	8	1
				South	35.9	35	35.1	30	30		1
70	Wabash - California to Pine	8/15/2008	Wabash - Broadway to H	East	34.3	32.7	34.4	30	30	17	1
				West	34.6	33.2	33.4	30	30		1
71	West - 6 th to Tydd	9/24/2008	West - 5 th to Myrtle	North	35.7	31.8	31.0	25	25	3	7
				South	31.7	32	33.2	25	25		7
72	West - 13 th to 14 th	9/17/2008	West - Myrtle to 14 th	North	35.7	35.3	34.3	30	30	6	1
				South	35.7	36	32.5	30	30		1
73	West - 17 th to 18 th	9/17/2008	West - 14 th to County Ln	North	37.3	34.6	38.2	30	30	8	1,3
				South	36.8	35	37.4	30	30		1

*Collisions

The average 85th percentile speeds compare as follows:

Year of Study	1999	2004	2009
Average 85 th % Speed	34.69	34.07	34.70

SECTION III**CITY OF EUREKA
RADAR SPEED HISTORY****INJURY COLLISION HISTORY**

YEAR	NUMBER OF INJURY COLLISIONS	PERCENT CHANGE
1986	282	2.5%
1987	283	0.4%
1988	268	-5.5%
1989	308	14.9%
1990	304*	-1.3%
1991	289	-4.9%
1992	313	8.3%
1993	321	2.6%
1994	314	-2.2%
1995	261	-16.9%
1996	280	7.3%
1997	282	0.7%
1998	295	4.6%
1999	261	-11.0%
2000	276	5.5%
2001	301	9.1%
2002	294	-2.3%
2003	387	16.9%
2004	340	-12.1%
2005	293	-13.8%
2006	289	-1.4%
2007	257	-11.1%
2008	222	-13.6%

** denotes new speed limits posted*

SECTION IV

SPEED CONTROL EFFORTS BY EUREKA POLICE DEPARTMENT

The Eureka Police Department has employed the use of radar for over thirty years. Radar is recognized as an effective enforcement tool and is used by a majority of law enforcement agencies in California, now including the California Highway Patrol (CHP), which has advocated the use of radar on roadways in the unincorporated areas of the State for a number of years.

If correctly used, citations issued as a result of radar enforcement are less frequently contested in court, or verbally challenged at the scene of the incident, when compared to pacing the speed of a violator visually with the patrol vehicle speedometer. Other methods of traffic enforcement include the use of marked patrol vehicles and solo motorcycles.

In 1998, the California Office of Traffic Safety (OTS) provided the City of Eureka with funds for the purchase of six handheld radar units, two moving radar units, and a LIDAR speed measuring device. The moving radar units are capable of being used as handheld radar's or mounted on the dash of the units and used to measure the speed of vehicles moving toward or away from the moving police unit. The LIDAR unit uses laser technology to measure the speed of traffic, and allows the operator to identify the speed of one vehicle, even in the middle of a string of vehicles. The OTS grant also allowed the Eureka Police Department to purchase a speed monitoring trailer, which shows the speed of traffic in large numbers, along with the posted speed limit for the roadway.

Currently, the department uses radar as personnel deployment allows. Three officers are assigned to the Traffic Section, and their responsibilities include both investigation of traffic collisions and traffic enforcement. Officers have been directed to concentrate on those streets where speeding vehicles have been observed by police officers, where speed caused collisions have recently occurred, or citizen's complaints have been received, in order to reduce the speed of motorists and prevent collisions by increasing enforcement and visibility of police presence. The radar speed trailer, when functional, is also used to increase driver awareness of their speeds and attempt to gain voluntary compliance.

Another tool used to gain compliance has been the use of a "dummy" car. A mannequin dressed as an officer is put behind the wheel of an out of service patrol unit, and parked in the speed problem areas. Motorists see the patrol unit, react instinctively by slowing down, and drive safer past the unit.

Excessive speed on the part of motorists in Eureka is a problem. Speeding is now the third leading cause of collisions in Eureka, behind improper turning and right-of-way violations. There were 105 speed caused collisions in Eureka in 2008, with 41 of those resulting in injuries. As of December 8th there have been 104 speed caused collisions in Eureka for current year, with 43 resulting in injuries. The use of radar in traffic speed

enforcement is the best alternative available because officers don't have to pace vehicles for blocks in order to get an accurate reading of the violators speed. Radar enforcement of speed laws works when it is deployed consistently and fairly, in the areas where speeding violations can cause collisions.

As time, workload, and other "called-for-services" permit, the department's patrol division will make every effort to more effectively address the on-going need for adequate traffic enforcement in the City.

APPENDIX "A"

DEFINITIONS

Speed Signs for Business and Residence Districts

CVC 21357. Speed restriction signs may, but need not, be erected upon any highway other than a state highway at the entrance thereof into a business or residence district unless required in this chapter.

Speed Signs for Special Areas

21359. Whenever the Department of Transportation or a local authority as authorized by this code determines and declares a speed limit different from the limit otherwise applicable under Sections 22349 and 22352, appropriate speed restriction signs shall be erected and maintained at the outside entrance of the highway or portion thereof upon which the special speed limit is applicable. The special speed limit is not effective until appropriate signs have been erected.

Maximum Speed Limit

CVC 22349. (a) Except as provided in Section 22356, no person may drive a vehicle upon a highway at a speed greater than 65 miles per hour.

(b) Notwithstanding any other provision of law, no person may drive a vehicle upon a two-lane, undivided highway at a speed greater than 55 miles per hour unless that highway, or portion thereof, has been posted for a higher speed by the Department of Transportation or appropriate local agency upon the basis of an engineering and traffic survey. For purposes of this subdivision, the following apply:

(1) A two-lane, undivided highway is a highway with not more than one through lane of travel in each direction.

(2) Passing lanes may not be considered when determining the number of through lanes.

(c) It is the intent of the Legislature that there be reasonable signing on affected two-lane, undivided highways described in subdivision (b) in continuing the 55 miles-per-hour speed limit, including placing signs at county boundaries to the extent possible, and at other appropriate locations.

Basic Speed Law

CVC 22350. No person shall drive a vehicle upon a highway at a speed greater than is reasonable or prudent having due regard for weather, visibility, the traffic on, and the surface and width of, the highway, and in no event at a speed which endangers the safety of persons or property.

Speed Law Violations

CVC 22351. (a) The speed of any vehicle upon a highway not in excess of the limits specified in Section 22352 or established as authorized in this code is lawful unless clearly proved to be in violation of the basic speed law.

(b) The speed of any vehicle upon a highway in excess of the prima facie speed limits in Section 22352 or established as authorized in this code is prima facie unlawful unless the defendant establishes by competent evidence that the speed in excess of said limits did not constitute a violation of the basic speed law at the time, place and under the conditions then existing.

Prima Facie Speed Limits

CVC 22352. (a) The prima facie limits are as follows and shall be applicable unless changed as authorized in this code and, if so changed, only when signs have been erected giving notice thereof:

(1) Fifteen miles per hour:

(A) When traversing a railway grade crossing, if during the last 100 feet of the approach to the crossing the driver does not have a clear and unobstructed view of the crossing and of any traffic on the railway for a distance of 400 feet in both directions along the railway. This subdivision does not apply in the case of any railway grade crossing where a human flagman is on duty or a clearly visible electrical or mechanical railway crossing signal device is installed but does not then indicate the immediate approach of a railway train or car.

(B) When traversing any intersection of highways if during the last 100 feet of the driver's approach to the intersection the driver does not have a clear and unobstructed view of the intersection and of any traffic upon all of the highways entering the intersection for a distance of 100 feet along all those highways, except at an intersection protected by stop signs or yield right-of-way signs or controlled by official traffic control signals.

(C) On any alley.

(2) Twenty-five miles per hour:

(A) On any highway other than a state highway, in any business or residence district unless a different speed is determined by local authority under procedures set forth in this code.

(B) When approaching or passing a school building or the grounds thereof, contiguous to a highway and posted with a standard "SCHOOL" warning sign, while children are going to or leaving the school either during school hours or during the noon recess period. The prima facie limit shall also apply when approaching or passing any school

grounds which are not separated from the highway by a fence, gate, or other physical barrier while the grounds are in use by children and the highway is posted with a standard "SCHOOL" warning sign. For purposes of this subparagraph, standard "SCHOOL" warning signs may be placed at any distance up to 500 feet away from school grounds.

(C) When passing a senior center or other facility primarily used by senior citizens, contiguous to a street other than a state highway and posted with a standard "SENIOR" warning sign. A local authority is not required to erect any sign pursuant to this paragraph until donations from private sources covering those costs are received and the local agency makes a determination that the proposed signing should be implemented. A local authority may, however, utilize any other funds available to it to pay for the erection of those signs.

(b) This section shall become operative on March 1, 2001.

Increase of Local Speed Limits to 65 Miles Per Hour

CVC 22357. (a) Whenever a local authority determines upon the basis of an engineering and traffic survey that a speed greater than 25 miles per hour would facilitate the orderly movement of vehicular traffic and would be reasonable and safe upon any street other than a state highway otherwise subject to a prima facie limit of 25 miles per hour, the local authority may by ordinance determine and declare a prima facie speed limit of 30, 35, 40, 45, 50, 55, or 60 miles per hour or a maximum speed limit of 65 miles per hour, whichever is found most appropriate to facilitate the orderly movement of traffic and is reasonable and safe. The declared prima facie or maximum speed limit shall be effective when appropriate signs giving notice thereof are erected upon the street and shall not thereafter be revised except upon the basis of an engineering and traffic survey. This section does not apply to any 25-mile-per-hour prima facie limit which is applicable when passing a school building or the grounds thereof or when passing a senior center or other facility primarily used by senior citizens.

(b) This section shall become operative on the date specified in subdivision (c) of Section 22366.

Decrease Near Children's Playgrounds

CVC 22357.1. Notwithstanding Section 22357, a local authority may, by ordinance or resolution, set a prima facie speed limit of 25 miles per hour on any street, other than a state highway, adjacent to any children's playground in a public park but only during particular hours or days when children are expected to use the facilities. The 25 miles per hour speed limit shall be effective when signs giving notice of the speed limit are posted.

Decrease of Local Speed Limits

CVC 22358. (a) Whenever a local authority determines upon the basis of an engineering and traffic survey that the limit of 65 miles per hour is more than is reasonable or safe upon any portion of any street other than a state highway where the limit of 65 miles per hour is applicable, the local authority may by ordinance determine and declare a prima facie speed limit of 60, 55, 50, 45, 40, 35, 30, or 25 miles per hour, whichever is found most appropriate to facilitate the orderly movement of traffic and is reasonable and safe, which declared prima facie limit shall be effective when appropriate signs giving notice thereof are erected upon the street.

(b) This section shall become operative on the date specified in subdivision (c) of Section 22366.

Decrease on Narrow Street

CVC 22358.3. Whenever a local authority determines upon the basis of an engineering and traffic survey that the prima facie speed limit of 25 miles per hour in a business or residence district or in a public park on any street having a roadway not exceeding 25 feet in width, other than a state highway, is more than is reasonable or safe, the local authority may, by ordinance or resolution determine and declare a prima facie speed limit of 20 or 15 miles per hour, whichever is found most appropriate and is reasonable and safe. The declared prima facie limit shall be effective when appropriate signs giving notice thereof are erected upon the street.

Decrease of Local Limits Near Schools or Senior Centers

CVC (a) (1) Whenever a local authority determines upon the basis of an engineering and traffic survey that the prima facie speed limit of 25 miles per hour established by paragraph (2) of subdivision (a) of Section 22352 is more than is reasonable or safe, the local authority may, by ordinance or resolution, determine and declare a prima facie speed limit of 20 or 15 miles per hour, whichever is justified as the appropriate speed limit by that survey.

(2) An ordinance or resolution adopted under paragraph (1) shall not be effective until appropriate signs giving notice of the speed limit are erected upon the highway and, in the case of a state highway, until the ordinance is approved by the Department of Transportation and the appropriate signs are erected upon the highway.

(b) (1) Notwithstanding subdivision (a) or any other provision of law, a local authority may, by ordinance or resolution, determine and declare prima facie speed limits as follows:

(A) A 15 miles per hour prima facie limit in a residence district, on a highway with a posted speed limit of 30 miles per hour or slower, when approaching, at a distance of less than 500 feet from, or passing, a school building or the grounds of a school building, contiguous to a highway and posted with a school warning sign that indicates a speed limit of 15 miles per hour, while children are going to or leaving the school, either

during school hours or during the noon recess period. The prima facie limit shall also apply when approaching, at a distance of less than 500 feet from, or passing, school grounds that are not separated from the highway by a fence, gate, or other physical barrier while the grounds are in use by children and the highway is posted with a school warning sign that indicates a speed limit of 15 miles per hour.

(B) A 25 miles per hour prima facie limit in a residence district, on a highway with a posted speed limit of 30 miles per hour or slower, when approaching, at a distance of 500 to 1,000 feet from, a school building or the grounds thereof, contiguous to a highway and posted with a school warning sign that indicates a speed limit of 25 miles per hour, while children are going to or leaving the school, either during school hours or during the noon recess period. The prima facie limit shall also apply when approaching, at a distance of 500 to 1,000 feet from, school grounds that are not separated from the highway by a fence, gate, or other physical barrier while the grounds are in use by children and the highway is posted with a school warning sign that indicates a speed limit of 25 miles per hour.

(2) The prima facie limits established under paragraph (1) apply only to highways that meet all of the following conditions:

(A) A maximum of two traffic lanes.

(B) A maximum posted 30 miles per hour prima facie speed limit immediately prior to and after the school zone.

(3) The prima facie limits established under paragraph (1) apply to all lanes of an affected highway, in both directions of travel.

(4) When determining the need to lower the prima facie speed limit, the local authority shall take the provisions of Section 627 into consideration.

(5) (A) An ordinance or resolution adopted under paragraph (1) shall not be effective until appropriate signs giving notice of the speed limit are erected upon the highway and, in the case of a state highway, until the ordinance is approved by the Department of Transportation and the appropriate signs are erected upon the highway.

(B) For purposes of subparagraph (A) of paragraph (1), school warning signs indicating a speed limit of 15 miles per hour may be placed at a distance up to 500 feet away from school grounds.

(C) For purposes of subparagraph (B) of paragraph (1), school warning signs indicating a speed limit of 25 miles per hour may be placed at any distance between 500 and 1,000 feet away from the school grounds.

(D) A local authority shall reimburse the Department of Transportation for all costs incurred by the department under this subdivision.

Downward Speed Zoning

CVC 22358.5. It is the intent of the Legislature that physical conditions such as width, curvature, grade and surface conditions, or any other condition readily apparent to a driver, in the absence of other factors, would not require special downward speed zoning, as the basic rule of Section 22350 is sufficient regulation as to such conditions.

Boundary Line Streets

CVC 22359. With respect to boundary line streets and highways where portions thereof are within different jurisdictions, no ordinance adopted under Sections 22357 and 22358 shall be effective as to any such portion until all authorities having jurisdiction of the portions of the street concerned have approved the same. This section shall not apply in the case of boundary line streets consisting of separate roadways within different jurisdictions.

Maximum Speed Limit on Local Highway Linking Districts

CVC 22360. (a) Whenever a local authority determines upon the basis of an engineering and traffic survey that the limit of 65 miles per hour is more than is reasonable or safe upon any portion of a highway other than a state highway for a distance of not exceeding 2,000 feet in length between districts, either business or residence, the local authority may determine and declare a reasonable and safe prima facie limit thereon lower than 65 miles per hour, but not less than 25 miles per hour, which declared prima facie speed limit shall be effective when appropriate signs giving notice thereof are erected upon the street or highway.

(b) This section shall become operative on the date specified in subdivision (c) of Section 22366.

Decreasing Speed Limit on Grades

CVC 22413. Whenever a local authority determines upon the basis of an engineering and traffic survey that the prima facie limit of 25 miles per hour is more than is reasonable and safe on any portion of a street having a grade in excess of 10 percent, the local authority may by ordinance determine and declare a maximum limit of 20 or 15 miles per hour, whichever is found most appropriate and is reasonable and safe. The declared maximum speed shall be effective when appropriate signs giving notice thereof are erected upon the street.

Speed Trap Prohibition

CVC 40801. No peace officer or other person shall use a speed trap in arresting, or participating or assisting in the arrest of, any person for any alleged violation of this code nor shall any speed trap be used in securing evidence as to the speed of any vehicle for the purpose of an arrest or prosecution under this code.

Speed Traps

CVC 40802. (a) A "speed trap" is either of the following:

(1) A particular section of a highway measured as to distance and with boundaries marked, designated, or otherwise determined in order that the speed of a vehicle may be calculated by securing the time it takes the vehicle to travel the known distance.

(2) A particular section of a highway with a prima facie speed limit that is provided by this code or by local ordinance under subparagraph (A) of paragraph (2) of subdivision (a) of Section 22352, or established under Section 22354, 22357, 22358, or 22358.3, if that prima facie speed limit is not justified by an engineering and traffic survey conducted within five years prior to the date of the alleged violation, and enforcement of the speed limit involves the use of radar or any other electronic device that measures the speed of moving objects. This paragraph does not apply to a local street, road, or school zone.

(b) (1) For purposes of this section, a local street or road is defined by the latest functional usage and federal-aid system maps submitted to the federal Highway Administration, except that when these maps have not been submitted, or when the street or road is not shown on the maps, a "local street or road" means a street or road that primarily provides access to abutting residential property and meets the following three conditions:

(A) Roadway width of not more than 40 feet.

(B) Not more than one-half of a mile of uninterrupted length. Interruptions shall include official traffic control signals as defined in Section 445.

(C) Not more than one traffic lane in each direction.

(2) For purposes of this section "school zone" means that area approaching or passing a school building or the grounds thereof that is contiguous to a highway and on which is posted a standard "SCHOOL" warning sign, while children are going to or leaving the school either during school hours or during the noon recess period. "School zone" also includes the area approaching or passing any school grounds that are not separated from the highway by a fence, gate, or other physical barrier while the grounds are in use by children if that highway is posted with a standard "SCHOOL" warning sign.

(c) (1) When all of the following criteria are met, paragraph (2) of this subdivision shall be applicable and subdivision (a) shall not be applicable:

(A) When radar is used, the arresting officer has successfully completed a radar operator course of not less than 24 hours on the use of police traffic radar, and the course was approved and certified by the Commission on Peace Officer Standards and Training.

(B) When laser or any other electronic device is used to measure the speed of moving objects, the arresting officer has successfully completed the training required in

subparagraph (A) and an additional training course of not less than two hours approved and certified by the Commission on Peace Officer Standards and Training.

(C) (i) The prosecution proved that the arresting officer complied with subparagraphs (A) and (B) and that an engineering and traffic survey has been conducted in accordance with subparagraph (B) of paragraph (2). The prosecution proved that, prior to the officer issuing the notice to appear, the arresting officer established that the radar, laser, or other electronic device conformed to the requirements of subparagraph (D).

(ii) The prosecution proved the speed of the accused was unsafe for the conditions present at the time of alleged violation unless the citation was for a violation of Section 22349, 22356, or 22406.

(D) The radar, laser, or other electronic device used to measure the speed of the accused meets or exceeds the minimal operational standards of the National Traffic Highway Safety Administration, and has been calibrated within the three years prior to the date of the alleged violation by an independent certified laser or radar repair and testing or calibration facility.

(2) A "speed trap" is either of the following:

(A) A particular section of a highway measured as to distance and with boundaries marked, designated, or otherwise determined in order that the speed of a vehicle may be calculated by securing the time it takes the vehicle to travel the known distance.

(B) (i) A particular section of a highway or state highway with a prima facie speed limit that is provided by this code or by local ordinance under subparagraph (A) of paragraph (2) of subdivision (a) of Section 22352, or established under Section 22354, 22357, 22358, or 22358.3, if that prima facie speed limit is not justified by an engineering and traffic survey conducted within one of the following time periods, prior to the date of the alleged violation, and enforcement of the speed limit involves the use of radar or any other electronic device that measures the speed of moving objects:

(I) Except as specified in subclause (II), seven years.

(II) If an engineering and traffic survey was conducted more than seven years prior to the date of the alleged violation, and a registered engineer evaluates the section of the highway and determines that no significant changes in roadway or traffic conditions have occurred, including, but not limited to, changes in adjoining property or land use, roadway width, or traffic volume, 10 years.

(ii) This subparagraph does not apply to a local street, road, or school zone.

CRITICAL (85th PERCENTILE) SPEED

This is the speed at or below which 85% of the traffic is moving. The speed chosen for speed zoning should be in 5 mile per hour increments and should normally be selected at a value nearest the 85th percentile speed.

10 MPH PACE

The pace is the 10 mph range of speeds containing the largest number of observations. The higher the percentage within the pace, the less the speed differential is. A high percentage indicates a desirable traffic flow.

APPENDIX "B"

METHOD OF STUDY AND EQUIPMENT USED

A. Method of Study

The method of study used by the City of Eureka in compiling this report was in conformance with the requirements of the California Manual on Uniform Traffic Control Devices (MUTCD) Section 2B.13, as follows:

MUTCD 2003 CALIFORNIA SUPPLEMENT (as revised September 26, 2006)

Section 2B.13 Speed Limit Sign (R2-1)

Standard:

After an engineering study has been made in accordance with established traffic engineering practices, the Speed Limit (R2-1) sign (see Figure 2B-1) shall display the limit established by law, ordinance, regulation, or as adopted by the authorized agency. The speed limits shown shall be in multiples of 10 km/h or 5 mph.

Guidance:

At least once every 5 years, States and local agencies should reevaluate non-statutory speed limits on segments of their roadways that have undergone a significant change in roadway characteristics or surrounding land use since the last review.

No more than three speed limits should be displayed on any one Speed Limit sign or assembly. When a speed limit is to be posted, it should be ~~within~~ established at the nearest 10 km/h or 5 mph increment of the 85th-percentile speed of free-flowing traffic.

Option:

The posted speed may be reduced by 10 km/h (5 mph) from the nearest 10 km/h or 5 mph increment of the 85th-percentile speed, where engineering study indicates the need for a reduction in speed to match existing conditions with the traffic safety needs of the community.

Support:

An example of the application of this speed limit criteria is as follows:

- If the 85th percentile speed in a speed survey was 60 km/h (37 mph), then the speed limit would be posted at 35 mph or optionally reduced to 30 mph. However,
- If the 85th percentile speed in a speed survey was 61 km/h (38 mph), then the speed limit would be posted at 40 mph or optionally reduced to 35 mph.

This method of establishing posted speed limits applies to all engineering and traffic surveys (E&TS) performed after May 20, 2004. This section, as amended for use in California, does not apply to E&TS performed prior to May 20, 2004. Examples:

- An Engineering and Traffic Survey (E&TS) performed on April 6, 1999 due for renewal on April 6, 2004 (5 years) would be performed per Chapter 8 of the 1996 Caltrans Traffic Manual, which was the applicable guidance at the time. This would then be due for renewal on April 6, 2009 using the California MUTCD criteria.
- However, if conditions of the E&TS and the applicable enforcement agency, its personnel and equipment meet provisions of CVC 40802.c.2.B.I, the E&TS could have been extended two additional years (for a total of 7 years). In this case, the posted speed limit(s) remain(s) enforceable for the seven-year period and would then be due for renewal on April 6, 2006 and would be renewed using California MUTCD criteria.
- Further, if at the end of the seven years, a registered engineer evaluates the highway section and determines that no significant changes in roadway or traffic conditions have occurred (see CVC 40802.c.2.B.II), the engineer could extend the E&TS for three additional years (for a total of 10 years). Renewal of the extended E&TS would then be deferred to April 6, 2009 and at that time performed with California MUTCD criteria.

Option:

Other factors that may be considered when establishing speed limits are the following:

- A. Road characteristics, shoulder condition, grade, alignment, and sight distance;
- B. The pace speed;
- C. Roadside development and environment;
- D. Parking practices and pedestrian activity; and
- E. Reported crash experience for at least a 12-month period.

Two types of Speed Limit signs may be used: one to designate passenger car speeds, including any nighttime information or minimum speed limit that might apply; and the other to show any special speed limits for trucks and other vehicles.

A changeable message sign that changes the speed limit for traffic and ambient conditions may be installed provided that the appropriate speed limit is shown at the proper times. A changeable message sign that displays to approaching drivers the speed at which they are traveling may be installed in conjunction with a Speed Limit sign.

Guidance:

If a changeable message sign displaying approach speeds is installed, the legend YOUR SPEED XX km/h (MPH) or such similar legend should be shown. The color of the changeable message legend should be a yellow legend on a black background or the reverse of these colors.

Support:

Advisory Speed signs are discussed in Sections 2C.36 and 2C.46 and Temporary Traffic Control Zone Speed signs are discussed in Part 6.

Speed limits in California are governed by the California Vehicle Code (CVC), Sections 22348 through 22413; also, pertinent sections are found in Sections 627 and 40802 and others referenced in this section. See Section 1A.11 for information regarding this publication.

Engineering and Traffic Survey (E&TS)

Support:

CVC Section 627 defines the term "Engineering and traffic survey" and lists its requirements.

Standard:

An engineering and traffic survey (E&TS) shall include, among other requirements deemed necessary by the department, consideration of all of the following:

- (1) Prevailing speeds as determined by traffic engineering measurements.
- (2) Collision records.
- (3) Highway, traffic, and roadside conditions not readily apparent to the driver.

Guidance:

The E&TS should contain sufficient information to document that the required three items of CVC Section 627 are provided and that other conditions not readily apparent to a driver are properly identified.

Prevailing speeds are determined by a speed zone survey. A speed zone survey should include:

- The intent of the speed measurements is to determine the actual speed of unimpeded traffic. The speed of traffic should not be altered by concentrated law enforcement, or other means, just prior to, or while taking the speed measurements.
- Only one person is required for the field work. Speeds should be read directly from a radar or other electronic speed measuring devices; or,
- Devices, other than radar, capable of accurately distinguishing and measuring the unimpeded speed of free flowing vehicles may be used.
- A location should be selected where prevailing speeds are representative of the entire speed zone section. If speeds vary on a given route, more than one speed zone section may be required, with separate measurements for each section. Locations for measurements should be chosen so as to minimize the effects of traffic signals or stop signs.
- Speed measurements should be taken during off-peak hours between peak traffic periods on weekdays. If there is difficulty in obtaining the desired quantity, speed measurements may be taken during any period with free flowing traffic.
- The weather should be fair (dry pavement) with no unusual conditions prevailing.
- The surveyor and equipment should not affect the traffic speeds. For this reason, an unmarked car is recommended, and the radar speed meter located as inconspicuously as possible.
- In order for the sample to be representative of the actual traffic flow, the minimum sample should be 100 vehicles in each survey. In no case should the sample contain less than 50 vehicles.
- Short speed zones of less than 0.8 km (0.5 mi) should be avoided, except in transition areas.
- Speed zone changes should be coordinated with changes in roadway conditions or roadside development.
- Speed zoning should be in 20 km/h (10 mph) increments except in urban areas where 10 km/h (5 mph) increments are preferable.
- Speed zoning should be coordinated with adjacent jurisdictions.

Support:

Physical conditions such as width, curvature, grade and surface conditions, or any other condition readily apparent to the driver, in the absence of other factors, would not require special downward speed zoning. Refer to CVC 22358.5.

Option:

When qualifying an appropriate speed limit, local authorities may also consider all of the following findings:

1. Residential density, if any of the following conditions exist on the particular portion of highway and the property contiguous thereto, other than a business district:
 - a. Upon one side of the highway, within 0.4 km (0.25 mi), the contiguous property fronting thereon is occupied by 13 or more separate dwelling houses or business structures.
 - b. Upon both sides of the highway, collectively, within a distance of 0.4 km (0.25 mi) the contiguous property fronting thereon is occupied by 16 or more separate dwelling houses or business structures.
 - c. The portion of highway is larger than 0.4 km (0.25 mi) but has the ratio of separate dwelling houses or business structures to the length of the highway described in either subparagraph a or b.
2. Pedestrian and bicyclist safety.

The following two methods of conducting E&TS may be used to establish speed limits:

1. State Highways - The E&TS for State highways is made under the direction of the Department of Transportation's District Traffic Engineer. The data includes:

- a. One copy of the Standard Speed Zone Survey Sheet (See Figure 2B-101(CA)) showing:
 - A north arrow
 - Engineer's station or post mileage
 - Limits of the proposed zones
 - Appropriate notations showing type of roadside development, such as "scattered business," "solid residential," etc. Schools adjacent to the highway are shown, but other buildings need not be plotted unless they are a factor in the speed recommendation or the point of termination of a speed zone.
 - Collision rates for the zones involved
 - Average daily traffic volume
 - Location of traffic signals, signs and markings

- If the highway is divided, the limits of zones for each direction of travel
 - Plotted 85th percentile and pace speeds at location taken showing speed profile
- b. A report to the District Director that includes:
- The reason for the initiation of speed zone survey.
 - Recommendations and supporting reasons.
 - The enforcement jurisdictions involved and the recommendations and opinions of those officials.
 - The stationing or reference post in kilometers (mileage) at the beginning and ending of each proposed zone and any intermediate equations. Location ties must be given to readily identifiable physical features.

2. City and County Through Highways, Arterials, Collector Roads and Local Streets.

- a. The short method of speed zoning is based on the premise that a reasonable speed limit is one that conforms to the actual behavior of the majority of motorists, and that by measuring motorists' speeds, one will be able to select a speed limit that is both reasonable and effective. Other factors that need to be considered include but are not limited to: the most recent two-year collision record, roadway design speed, safe stopping sight distance, superelevation, shoulder conditions, profile conditions, intersection spacing and offsets, commercial driveway characteristics, and pedestrian traffic in the roadway without sidewalks.
- b. Determination of Existing Speed Limits - Figures 2B-103(CA) & 2B-104(CA) show samples of data sheets which may be used to record speed observations. Specific types of vehicles may be tallied by use of letter symbols in appropriate squares.

In most situations, the short form for local streets and roads will be adequate; however, the procedure used on State highways may be used at the option of the local agency.

Guidance:

The factors justifying a reduction below the 85th percentile speed for the posted speed limit are the same factors mentioned above. Whenever such factors are considered to establish the speed limit, they should be documented on the speed zone survey or the accompanying engineering report. The establishment of a speed limit of more than 10 km/h (5 mph) below the 85th percentile speed should be done with great care as studies have shown that establishing a speed limit at less than the 85th

percentile generally results in an increase in collision rates; in addition, this may make violators of a disproportionate number of the reasonable majority of drivers.

Support:

Generally, the most decisive evidence of conditions not readily apparent to the driver surface in collision histories. Speed limits are established at or near the 85th percentile speed, which is defined as that speed at or below which 85th percent of the traffic is moving. The 85th percentile speed is often referred to as the critical speed. Pace speed is defined as the 16 km/h (10 mph) increment of speed containing the largest number of vehicles (See Figure 2B-102(CA)). The lower limit of the pace is plotted on the Speed Zone Survey Sheets as an aid in determining the proper zone limits. Speed limits higher than the 85th percentile are not generally considered reasonable and prudent. Speed limits below the 85th percentile do not ordinarily facilitate the orderly movement of traffic and require constant enforcement to maintain compliance. Speed limits established on the basis of the 85th percentile conform to the consensus of those who drive highways as to what speed is reasonable and prudent, and are not dependent on the judgment of one or a few individuals.

The majority of drivers comply with the basic speed law. Speed limits set at or near the 85th percentile speed provide law enforcement officers with a limit to cite drivers who will not conform to what the majority considers reasonable and prudent. Further studies show that establishing a speed limit at less than the 85th percentile (Critical Speed) generally results in an increase in collision rates.

Option:

When roadside development results in traffic conflicts and unusual conditions which are not readily apparent to drivers, as indicated in collision records, speed limits somewhat below the 85th percentile may be justified. Concurrence and support of enforcement officials are necessary for the successful operation of a restricted speed zone.

Guidance:

Speed zones of less than 0.8 km (0.5 mi) and short transition zones should be avoided.

Legal Authority for Establishing Speed Limits

Support:

Delegation of legal authority to set speed limits on State highways is given to Department of Transportation's District Directors. The District Director of each transportation district is authorized to issue orders regulating the speed of traffic, up to 110 km/h (65 mph) on State highways. The Director of the Department of Transportation retains the authority to approve variable, minimum, and maximum speeds up to 110 km/h (70 mph) on State freeways.

Standard:

The speed limits shown in Table 2B-103(CA) shall apply, unless changed upon the basis of an engineering and traffic survey (E&TS).

Option:

The speed limits shown in Table 2B-104(CA) may apply, unless changed upon E&TS.

Variable Speed Limits on Freeways - See CVC 22355

Option:

The following speed limits may apply:

- Whenever the Department of Transportation determines based upon an engineering and traffic survey (E&TS) that the safe and orderly movement of traffic upon any freeway segment will be facilitated by the establishment of variable speed limits.
- The Department may erect, regulate, and control signs upon the state highway which is a freeway, or any portion thereof, which, if used, signs shall be designed to permit display of different speeds at various times of the day or night.
- Such signs need not conform to the standards & specifications per CVC 21400, but if used, shall be of sufficient size and clarity to give adequate notice of the applicable speed limit.

Minimum Speed Limits on State Highways - See CVC 22400

Option:

The following speed limits may apply:

- Whenever the Department of Transportation determines based upon an engineering and traffic survey (E&TS) that slow speeds on any part of a state highway consistently impede the normal and reasonable movement of traffic, the Department may determine and declare a minimum speed limit. Appropriate signs giving notice shall then be installed on that segment.
- A motorist can be cited for stopping or impeding the normal and reasonable movement of traffic unless the stop is necessary for safe operation and in compliance with the law.

Speed Traps

Support:

Refer to CVC 40802 for Speed Traps.

Standard:


A speed trap shall not apply to a local street, road, or school zone. A section of highway shall be defined as a speed trap if the prima facie speed limit is not justified by an engineering and traffic survey (E&TS) within five years, and the enforcement of the speed limit involves the use of radar or any other electronic device that measures the speed of moving objects. This time provision shall be extended to seven years when using radar and all of the following criteria are met:

- The arresting officer has successfully completed a minimum of 24 hours of certified radar operator course training.
- The radar used to measure the speed meets or exceeds the minimal operational standards of the National Traffic Highway Safety Administration, and has been calibrated within three years of the alleged violation. This time provision shall be extended to seven years when using laser or other electronic device (other than radar) and all of the following criteria are met:
 - The arresting officer has successfully completed a minimum of 24 hours of certified radar operator course training.
 - The arresting officer has successfully completed a minimum of 2 hours of additional approved certified training.

- The radar used to measure the speed meets or exceeds the minimal operational standards of the National Traffic Highway Safety Administration, and has been calibrated within three years of the alleged violation.

Option:

This time provision for an E&TS may be extended to ten years when all of the above conditions are met and no significant changes in roadway or traffic conditions have occurred, including changes in adjoining property or land use, roadway width, or traffic volume as determined by a registered engineer.

TRAFFIC OPERATIONS POLICY DIRECTIVE		NUMBER: 09-04	PAGE: 1 of 7
ROBERT COPP, DIVISION CHIEF (Signature) 		DATE ISSUED: June 29, 2009	EFFECTIVE DATE: July 1, 2009
SUBJECT: Change in current California Manual on Uniform Traffic Control Devices (California MUTCD) policy and procedure for setting speed limits in California.		DISTRIBUTION <input checked="" type="checkbox"/> All District Directors <input checked="" type="checkbox"/> All Deputy District Directors - Traffic Operations <input checked="" type="checkbox"/> All Deputy District Directors - Maintenance <input checked="" type="checkbox"/> All Deputy District Directors - Construction <input checked="" type="checkbox"/> All Deputy District Directors - Design <input type="checkbox"/> All Deputy District Directors - Transportation Planning <input checked="" type="checkbox"/> Chief, Division of Engineering Services <input checked="" type="checkbox"/> Chief Counsel, Legal Division <input checked="" type="checkbox"/> Publications (California MUTCD Website) www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ca_mutcd.htm <input type="checkbox"/> Headquarters Division Chiefs for:	
DOES THIS DIRECTIVE AFFECT OR SUPERSEDE ANOTHER DOCUMENT? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		IF YES, DESCRIBE Amends Chapter 2B of the California MUTCD.	
WILL THIS DIRECTIVE BE INCORPORATED IN THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		IF YES, DESCRIBE Chapter 2B, Sections 2B.13.	

DIRECTIVE

Pursuant to the authority granted to the California Department of Transportation (Department) in Section 21400 and 21401 of the California Vehicle Code (CVC), the changes included in this directive for setting speed limits in California shall be included in Part 2 of the California MUTCD, dated September 26, 2006.

IMPLEMENTATION

In this section, for purposes of clarity, strikethrough text is used to denote text in the California MUTCD that is being deleted and italic text is used to denote text that is being added to the California MUTCD. All other formatting as defined under the Definitions section of this Policy Directive is still applicable.

The following policies shall be included in the California MUTCD:

Section 2B.13 Speed Limit Sign (R2-1)

Support:

The setting of speed limits can be controversial and requires a rational and defensible determination to maintain public confidence. Speed limits are normally set near the 85th-percentile speed that statistically represents one standard deviation above the average speed and establishes the upper limit of what is considered reasonable and prudent. As with most laws, speed limits need to depend on the voluntary compliance of the greater majority of motorists. Speed limits cannot be set arbitrarily low, as this would create violators of the majority of drivers and would not command the respect of the public.

Standard:

After an engineering and traffic survey (E&TS) study has been made in accordance with established traffic engineering practices, the Speed Limit (R2-1) sign (see Figure 2B-1) shall display the limit established by law, ordinance, regulation, or as adopted by the authorized agency. The speed limits shown shall be in multiples of 10 km/h or (5 mph).

Guidance:

At least once every 5, 7 or 10 years, in compliance with CVC Section 40802, States and local agencies should reevaluate non-statutory speed limits on segments of their roadways that have undergone a significant change in roadway characteristics or surrounding land use since the last review.

No more than three speed limits should be displayed on any one Speed Limit sign or assembly.

When a speed limit is to be posted, it should be established at the nearest 10 km/h or 5 mph increment of the 85th-percentile speed of free-flowing traffic.

Standard:

When a speed limit is to be posted, it shall be established at the nearest 10 km/h (5 mph) increment of the 85th-percentile speed of free-flowing traffic, except as shown in the Option below.

Option:

The posted speed may be reduced by 10 km/h (5 mph) from the nearest 10 km/h or (5 mph) increment of the 85th-percentile speed, in compliance with CVC Sections 627 and 22358.5, where engineering study indicates the need for a reduction in speed to match existing conditions with the traffic safety needs of the community.

Standard:

If the speed limit to be posted has had the 10 km/h (5 mph) reduction applied, then an E&TS shall document in writing the conditions and justification for the lower speed limit and be approved by a registered Civil or Traffic Engineer. The reasons for the lower speed limit shall be in compliance with CVC Sections 627 and 22358.5.

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IMPLEMENTATION (Cont'd)

Support:

An example of the application of this speed limit criteria is as follows:

- If the 85th percentile speed in a speed survey was 60 km/h (37 mph), then the speed limit would be posted at 35 mph or optionally reduced to 30 mph. However,
- If the 85th percentile speed in a speed survey was 61 km/h (38 mph), then the speed limit would be posted at 40 mph or optionally reduced to 35 mph.

~~This method of establishing posted speed limits applies to all engineering and traffic surveys (E&TS) performed after May 20, 2004. This section, as amended for use in California, does not apply to E&TS performed prior to May 20, 2004. Examples:~~

- ~~◦ An Engineering and Traffic Survey (E&TS) performed on April 6, 1999 due for renewal on April 6, 2004 (5 years) would be performed per Chapter 8 of the 1996 Caltrans Traffic Manual, which was the applicable guidance at the time. This would then be due for renewal on April 6, 2009 using the California MUTCD criteria.~~
- ~~◦ However, if conditions of the E&TS and the applicable enforcement agency, its personnel and equipment meet provisions of CVC 40802.e.2.B.I, the E&TS could have been extended two additional years (for a total of 7 years). In this case, the posted speed limit(s) remain(s) enforceable for the seven year period and would then be due for renewal on April 6, 2006 and would be renewed using California MUTCD criteria.~~
- ~~◦ Further, if at the end of the seven years, a registered engineer evaluates the highway section and determines that no significant changes in roadway or traffic conditions have occurred (see CVC 40802.e.2.B.II), the engineer could extend the E&TS for three additional years (for a total of 10 years). Renewal of the extended E&TS would then be deferred to April 6, 2009 and at that time performed with California MUTCD criteria.~~

This directive does not recommend any other changes for the remainder of this section at this time.

In all applications of this policy, engineering judgment must be exercised. The objective is to provide uniform applications of signs statewide. If there are any questions regarding implementation, districts should consult with the Headquarters Traffic Operations Liaison.

DELEGATION

No new delegations of authority are created under this policy.

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BACKGROUND

The purpose of this directive is to implement the changes proposed in the Decision Document entitled "Guidelines for Setting Speed Limits" signed on May 15, 2009 by Director Will Kempton.

This Decision Document was the result of many discussions about speed limit concerns held before the California Traffic Control Devices Committee (CTCDC) since June of 2007. During these discussions, many comments were received from local agencies and their officials representing law enforcement, public works, and the court system. A special hearing was held on March 19, 2009 and was attended by the Director and the California Highway Patrol Commissioner. The purpose of this hearing was to bring closure to this discussion before the Director issued his Decision Document.

After reviewing the concerns expressed by various participants involved with setting and enforcing speed limits, Caltrans determined there was a lack of consistency in the analysis and process that documents Engineering and Traffic Surveys to establish rational and enforceable speed limits.

In 2004, the California Supplement to the 2003 Federal MUTCD changed the procedure setting speed limits used previously in the 1996 Caltrans Traffic Manual. These changes were made to bring California into compliance with the Federal MUTCD at that time, but the California Supplement included the option to allow a 5mph reduction from the nearest increment of the 85th percentile speed. The changes are summarized below:

1996 Traffic Manual:

The speed limit normally should be established at the first five mile per hour (mph) increment below the 85th percentile speed. However, in matching existing conditions with the traffic safety needs of the community, engineering judgment may indicate the need for a further reduction of five mph.

MUTCD 2003 (Federal Guidance, does not allow 5mph reduction):

Guidance:

When a speed limit is to be posted, it should be within 10 km/h or 5 mph of the 85th percentile speed of free-flowing traffic.

May 2004 CA Supplement:

Guidance:

When a speed limit is to be posted, it should be established at the nearest 10 km/h or 5 mph increment of the 85th percentile speed of free-flowing traffic.

Option:

The posted speed may be reduced by 10 km/h (5 mph) from the nearest 10 km/h or 5 mph increment of the 85th percentile speed, where engineering study indicates the need for a reduction in speed to match existing conditions with the traffic safety needs of the community.

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SPEED LIMITS SET WITH 2004 CHANGES

After applying the “nearest 5mph increment of the 85th percentile speed” criteria, many speed limits were being raised after the 2004 change in the California MUTCD speed limit procedures. Some agencies would then simply apply the 5 mph reduction to keep the speed limit at the same level or lower. Also, appropriate justification was not written up in the E&TS for many of these speed zones and speeding tickets were not upheld in court if the presiding official saw a speed limit set below the 85th percentile speed.

PROCEDURE AFTER JULY 1, 2009

This directive clarifies the procedure for setting speed limits to address the issues discussed above. The two new standards for Section 2B.13 of the California MUTCD will be implemented to clarify the process and to help set speed limits that are uniform, rational and enforceable with full support of the judicial system. Requirements of the new standards are shown below:

- The speed limit shall be established at the nearest 5mph increment of the 85th percentile.
- If the 5 mph reduction is applied, the E&TS shall document in writing the conditions and justification for the reduced speed limit and be approved by a registered Civil or Traffic Engineer.

ONE YEAR TRIAL and DATA COLLECTION

In order to evaluate any impacts of the new standards, the following data needs to be collected and evaluated over the next twelve months (from E&TS's completed between July 1, 2009 and July 1, 2010):

- Jurisdiction and Location identification
- Existing posted speed limit
- 85th percentile speed limit
- 50th percentile speed limit
- 10-mph pace (the speed range that includes the most vehicles surveyed)
- List of reasons for applying a 5 mph reduction (if used)
- New posted speed limit

This information should be sent to Caltrans at the following e-mail address:

roberta.mclaughlin@dot.ca.gov

The data will be reviewed for trends in the posting of new speed limits. After July 1, 2010 this information will be presented to the Caltrans Director, CHP Commissioner and the CTCDC for consideration to make additional changes to the policy for setting speed limits in California.

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ENGINEERING AND TRAFFIC SURVEY WORKSHOPS

The Director's Decision Document also states that Caltrans will develop an E&TS training program for engineers, enforcement personnel, and judiciary officials. Specific workshop topics will include:

- Conducting an Engineering and Traffic Survey
- Selecting locations for speed data collection
- Items to be included in the E&TS written report
- Documenting reasons for applying the 5 mph reduction
- Presenting findings to local government officials
- Using the E&TS to review speeding citations challenged in court

Workshops will be held in each of the 12 Caltrans District Offices and will be scheduled over the next 6 months. Workshop location, contact information and dates will be posted on the Office of Signs, Markings and External Support web site:

<http://www.dot.ca.gov/hq/traffops/signtech/>

SPEED LIMIT IMPACTS ON YELLOW SIGNAL TIMING

In the California MUTCD, Section 4D.10 - Yellow Change and Red Clearance Intervals, the Standard states that the yellow light change interval shall be set using the posted speed limit. When the posted speed limit is set below the 85th percentile speed as a result of a new E&TS, there may be a need to re-evaluate the length of time given to the yellow signal phase. Consideration should be given to use the 85th percentile speed to increase the yellow light change interval, as allowed by the option in the California MUTCD. An increase change of 5 mph or greater in the posted speed limit should result in the relocation of traffic signal vehicle detectors.

The revision of the California MUTCD is a common practice based upon need. The Department, pursuant to CVC Section 21400; must conduct public hearings before it can revise existing traffic control device policies and approve new signs for use on public roadways. The California Traffic Control Devices Committee (CTCDC) is the forum used to satisfy this requirement.

The Federal Highway Administration has reviewed the proposed modifications to the California MUTCD and has determined that they are in substantial compliance with the National MUTCD.

This policy will be retired when it is incorporated in the next revision of the California MUTCD.

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DEFINITIONS

When used in this Traffic Operations Policy Directive, the text shall be defined as follows:

- 1) **Standard** – a statement of required, mandatory or specifically prohibited practice. All standards text appears in **bold** type. The verb **shall** is typically used. Standards are sometimes modified by Options.
- 2) **Guidance** – a statement of recommended, but not mandatory, practice in typical situations, with deviations allowed if engineering judgment or engineering study indicates the deviation to be appropriate. All Guidance statements text appears in underline type. The verb should is typically used. Guidance statements are sometime modified by Options.
- 3) **Option** – a statement of practice that is a permissive condition and carries no requirement or recommendation. Options may contain allowable modifications to a Standard or Guidance. All Option statements text appears in normal type. The verb may is typically used.
- 4) **Support** – an informational statement that does not convey any degree of mandate, recommendation, authorization, prohibition, or enforceable condition. Support statements text appears in normal type. The verbs shall, should and may are not used in Support statements.

ATTACHMENTS

None

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B. Equipment Used

The equipment used to sample vehicular speeds was the Eureka Engineering Department's radar unit described below:

Manufacturer - MPH Industrees.
Model - "Speedgun"
Serial No. - HHM373000310
Calibration Date - 04/02/08

The radar unit was handheld in an unmarked car.

C. Personnel

The radar speed survey, compilation of the data, and spot speed checks on gathered data were conducted by Emily Curtis and Scott Ellsmore, Engineering Technicians.

Dan Moody, Engineering Traffic Operations, provided supervision and instruction as needed.

This project was conducted under the direction of the City Engineer. Input for the report was also received from the Department of Public Safety.

APPENDIX "C"

STREET CHARACTERISTICS

This section provides a description of some of the physical characteristics of each street segment monitored in this survey. All streets surveyed are defined at a level higher than local streets on the latest federal aid system map. These streets must be included in the survey as required under Section 20802 of the California Vehicle Code. Some of the items included are:

1. Street Width
2. Land Use
3. Parking
4. School Zones
5. Cross Streets
6. Driveway Access to Street
7. Congestion

B STREET

7th Street to Wabash

Narrow roadway - 36 feet in width. Primarily residential area with heavy on-street parking, numerous driveways and intersecting streets. Elementary school and school crosswalk at Clark Street.

- **Wabash Avenue to Buhne Street**

Narrow 36 foot roadway. Primarily residential area with some commercial development near Wabash Avenue. Heavy on-street parking and numerous driveways and intersecting streets.

Buhne Street to Harris Street

Narrow roadway - 36 feet in width. Primarily residential area with an elementary school near Henderson Street. Heavy on-street parking and numerous driveways and intersecting streets.

BUHNE STREET

- **Fairfield Street to E Street**

Narrow 36 foot roadway. Primarily residential area with heavy on-street parking, numerous driveways and intersecting streets.

E Street to J Street

Narrow 36-foot roadway. Primarily residential area with playground between H Street and I Street. Heavy on-street parking, numerous driveways and intersecting streets.

- **J Street to Harrison Avenue**

40 foot roadway. Primarily residential area with medical offices near Harrison Avenue. Steep hills east of S Street. Heavy on-street parking, numerous driveways. Poor sight distance at Dean Street. Many turning movements.

CALIFORNIA STREET

- **7TH Street to Wabash**

Narrow 36 foot roadway. Primarily residential area with spots of commercial development. Heavy on-street parking, numerous driveways and intersecting streets. Signed bike route.

- **Wabash Avenue to Buhne Street**

Narrow 36 foot roadway. Primarily residential area with spots of commercial development. A senior center and Alzheimer's center are located south of Del Norte Street. Heavy on-street parking, numerous driveways and intersecting streets. Signed bike route.

- **Buhne Street to Harris Street**

Narrow 36 foot roadway. Primarily residential area with large playground north of Henderson Street. Heavy on-street parking, numerous driveways and intersecting streets. Signed bike route.

CAMPTON ROAD

- **Oak Street to South City Limits**

40 foot roadway. Primarily undeveloped land with some residential development. Elementary school and crosswalk near Oak Street. No sidewalks, steep grade and sharp curves near city limits.

CENTRAL AVENUE

- **Harris Street to South Avenue**

41.5 foot roadway. Residential area with an elementary school near South Avenue. Heavy on-street parking with numerous driveways.

DOLBEER STREET

- **Harris Street to Hemlock**

Narrow 36 foot roadway. Residential area on east side with ball park and an elementary school on the west side. School crosswalk at Chester Street. Heavy on-street parking and pedestrian movements when ball games are in progress.

E STREET

- **7th Street to 14th Street**

43 foot roadway. Mixture of residential, commercial and civic building. Very heavy on-street parking and turning movements. Numerous driveways and intersecting streets.

- **14th Street to Huntoon Street**

43 foot roadway. Primarily residential area with some commercial development. Playgrounds and tennis courts between 14th and 15th Streets. A private school located at Humboldt Street with school crosswalks at Humboldt Street and Trinity Street. Heavy on-street parking, numerous driveways and intersecting streets.

- **Huntoon Street to Harris Street**

43 foot roadway. Commercial development south of Dollison Street to Harris Street (Henderson Center). Residential area north of Dollison Street. Heavy on-street parking (especially in Henderson Center), numerous driveways, intersecting streets and heavy turning movements.

- **Harris Street to Orchard Street**

41 foot roadway. Primarily residential area. Moderate on-street parking. Some areas without sidewalks. Sharp grade changes south of Hodgson Street.

- **Orchard Street to South City Limits**

41 foot roadway. Primarily residential area. Moderate on-street parking. Some areas without sidewalks.

F STREET

- **Harris Street to Orchard Street**

41 foot roadway. Primarily residential area with some commercial establishments. Heavy on-street parking, numerous driveways and intersecting streets.

- **Orchard Street to South City Limits**

41 foot roadway. Residential area. Heavy on-street parking and numerous driveways.

FAIRFIELD STREET

Wabash Avenue to Buhne Street

Narrow 36 foot roadway. Primarily residential area with spots of commercial development near Wabash Avenue. Sharp direction change in street at Hawthorn. Heavy on-street parking and numerous driveways.

- **Buhne Street to Harris Street**

Narrow 36 foot roadway. Residential area. Heavy on-street parking and numerous driveways.

FAIRWAY DRIVE

- **F Street to Lundblade Drive**

Roadway width varies from 25 to 35 feet. Sidewalks are constructed only on portion north of golf course. Street traverses area of single family homes, undeveloped land and the golf course. Sharp curves and steep downgrade. Open culvert at bottom of hill. Some on-street parking and driveways.

Lundblade Drive to City Limits

Roadway width varies from 25 to 35 feet. Street traverses the golf course. Sharp curves and steep hill near city limits. No sidewalks. Visibility restricted out of golf course parking lot. Mid-block crosswalk at golf course.

14TH STREET

- **Broadway to California Street**

Narrow 36 foot roadway. Primarily residential area with some commercial development. Heavy on-street parking, numerous driveways and intersecting streets.

- **California to H Street**

Narrow 36 foot roadway. Residential area. Heavy on-street parking, numerous driveways and intersecting streets. Sharp angle in street at G Street.

H Street to M Street

Narrow 36 foot roadway. Residential area. Heavy on-street parking, numerous driveways and intersecting streets.

- **M Street to West Avenue**

40 foot roadway. Primarily residential area with some undeveloped land. Moderate on-street parking, numerous driveways and several intersecting streets. There is a large dip in the street between N Street and R Street.

GLEN STREET

- **Harris Street to Gibson Avenue**

Narrow 36 foot roadway. Residential area with heavy on-street parking and numerous driveways. Playground near Gibson Avenue. Sharp angle in street at Gibson Avenue.

- **Gibson Avenue to Allard Avenue**

Narrow 36 foot roadway. Residential area with heavy on-street parking and numerous driveways. There is a playground between Gibson Avenue and Highland Avenue. There is also a sharp angle in the street near the playground. There is a hill between McCullens Avenue and Highland Avenue that restricts visibility for drivers leaving driveways. Heavy pedestrian activity.

H STREET

- **7th Street to 14th Street**

One way, 51 foot roadway. Primarily residential area with some commercial development near 7th Street. Heavy on-street parking, numerous driveways and intersecting streets.

- **14th Street to Buhne Street**

One way, 51 foot roadway. Residential area with heavy on-street parking and numerous driveways and intersecting streets. School crosswalk at Huntoon Street.

- **Buhne Street to Harris Street**

One way, 51 foot roadway. Primarily residential area with some commercial/office development near Harris Street. There is a playground adjacent to the street between Buhne and Carson Streets. There is a major County facility near Harris Street. Heavy on-street parking especially near the County facility, numerous driveways and intersecting streets.

- **Harris Street to Manzanita Avenue**

51 foot roadway. Primarily a residential area with some office and medical facilities near Harris Street. On-street parking is heavy near the medical offices. There are numerous driveways and intersecting streets.

- **Manzanita Avenue to Oak Street**

51 foot roadway. Residential area with an elementary school and crosswalk at Oak Street. Moderate on-street parking and numerous driveways. Sharp angle in street near Oak Street.

HARRIS STREET

- **Broadway to California Street**

One way street with a 46 foot roadway width. Primarily a commercial area with a housing facility on the south side of the street opposite a mall on the north side. On-street parking is moderate (restricted adjacent to mall). There is an elementary school located east of Summer Street. There are numerous driveways and intersecting streets with very heavy turning movements, especially in and out of the mall. Heavy pedestrian

activity. Signed 5' bike lane on right side of street.

- **California Street to I Street**

One way street with a 44 foot roadway. Combination of commercial area (Henderson Center) and residential areas. Heavy on-street parking, numerous driveways and intersecting streets. Very heavy turning movements in the Henderson Center area. Signed 5' bike lane on the right side of the street.

- **I Street to R Street**

44 foot roadway. Residential area with moderate on-street parking, numerous driveways and intersecting streets.

- **R Street to Harrison Avenue**

44 foot roadway. Residential area with moderate on-street parking. Numerous driveways and intersecting streets. Sharp dip and jog in the street between W Street and Dolbeer Street. Poor sight distance at Dolbeer Street.

HARRISON AVENUE

- **Myrtle Avenue to 18th Street**

40 foot roadway. Residential area with moderate on-street parking, numerous driveways and intersecting streets. Center of street is easterly city limits.

- **18th Street to Buhne Street**

40 foot roadway. Combination of residential, commercial and medical facilities. Hospital zone. Very heavy on-street parking. Very heavy turning movements in and out of medical and commercial establishments. Center of street is easterly city limits.

- **Buhne Street to Harris Street**

40 foot roadway. Combination of residential, commercial and medical facilities. Heavy on-street parking near Buhne Street. Numerous driveways and intersecting streets with heavy turning movements. Center of street is easterly city limits.

HENDERSON STREET

- **Broadway to California Street**

42 foot roadway. One way street. Combination of commercial and residential area. Fire station at Ocean Avenue. Curving street in the vicinity of the mall. Moderate on-street parking, numerous driveways and intersecting streets. School crossing with crossing guard. Signed 5' wide bike lane on right side of street.

- **California Street to I Street**

One way street. 42 foot roadway. Combination of residential and commercial (Henderson Center). High school and elementary school and crosswalks west of Henderson Center. Heavy on-street parking, numerous driveways and intersecting streets. Very heavy turning movements in the Henderson Center area. Signed 5' bike lane on the right side of the street.

- **I Street to M Street**

Two way traffic. Narrow 36 foot roadway. Residential area with heavy on-street parking, numerous driveways and intersecting streets.

- **M Street to S Street**

Narrow 36 foot roadway. Residential area with heavy on-street parking, numerous driveways and intersecting streets.

HIGHLAND AVENUE

- **Broadway to Glen Street**

40 foot roadway. Primarily residential area with some commercial establishments near Broadway. Playground near Glen Street. Uncontrolled intersections. Moderate on-street parking, numerous driveways. Some areas without sidewalks.

HODGSON STREET

- **F Street to N Street**

Narrow 36 foot roadway. Primarily a residential area with some commercial development. On-street parking, numerous driveways and intersecting streets.

- **N Street to W Street**

Narrow 36 foot roadway. Primarily a residential area with some commercial development. On-street parking, numerous driveways and intersecting streets. Street has a sharp dip and a reverse curve between N and P Streets. Restricted visibility in that area.

I STREET

- **7th Street to 14th Street**

One way street with 51 foot roadway. Primarily a residential area with some commercial development near 7th Street. Heavy on-street parking, numerous driveways and intersecting streets.

- **14th Street to Buhne Street**

One way street with a 51 foot roadway. Residential area with an elementary school and crosswalk at Huntoon Street. Heavy on-street parking, numerous driveways and intersecting streets.

- **Buhne Street to Harris Street**

One way street with a 51 foot roadway. Residential area with County facility near Harris Street. Playground between Buhne and Carson Streets. Heavy on-street parking, numerous driveways and intersecting streets.

J STREET

- **7th Street to 14th Street**

51 foot roadway. Residential area with heavy on-street parking, numerous driveways and intersecting streets. Signed 5' bike lanes on each side of the street.

- 14th Street to Buhne Street**

51 foot roadway. Residential area high school in the vicinity of Huntoon Street. Very heavy on-street parking, numerous driveways and intersecting streets. Heavy pedestrian traffic. Signed 5' bike lanes on each side of street.

- Buhne Street to Harris Street**

51 foot roadway. Residential area with heavy on-street parking, numerous driveways and intersecting streets. Signed 5' bike lanes on each side of the street.

M STREET

- **7th Street to 14th Street**

42 foot roadway. Primarily a residential area with a playground between 10th Street and 11th Street. Grocery store at 10th Street. Heavy on-street parking, numerous driveways and intersecting streets.

MCCULLENS AVENUE

- **Broadway to Glen Street**

Narrow 36 foot roadway. Residential area with heavy on-street parking and numerous driveways. Grade change east of Iowa Street.

McFARLAN STREET

- **Myrtle Avenue to Hillside Drive**

Narrow 36 foot roadway. Residential area with heavy on-street parking, numerous driveways. Grade change north of 15th Street.

MYRTLE AVENUE

5th Street to West Avenue

48 foot roadway. Combination of residential, commercial developments and undeveloped land. Fire station located at Cousins Street. Very heavy turning movements in and out of 8th Street to the Cooper Gulch recreation area. Very heavy traffic volume on street. Congested intersection at West Avenue. Center left turn lane. Signed 5' bike lanes on each side of the street. Parking is not allowed on either side of street.

- **West Avenue to Harrison Avenue**

48 foot roadway. Combination of residential, commercial developments and undeveloped land. Moderate on-street parking. Very heavy turning movements in and out of shopping center near West Avenue. Very heavy traffic volume on street. Congested intersection at West Avenue. Center left turn lane. Signed 5' bike lanes on each side of the street. Parking is not allowed on the north side of the street.

S STREET

- **County Lane to Buhne Street**

40 foot roadway. Primarily a residential area with a middle school south of County Lane. Mid-block school crossing. Moderate on-street parking and some driveways. Steep hill and sharp curve near County Lane. Heavy pedestrian traffic when children are going to and from school.

- **Buhne Street to Harris Street**

40 foot roadway. Residential area with heavy on-street parking, numerous driveways and intersecting streets. Heavy pedestrian traffic when children are going to and from school.

7TH STREET

- **Broadway to J Street**

One way traffic. 40 foot roadway. Commercial area with very heavy on-street parking, numerous driveways and intersecting streets. Heavy vehicular turning movements and parking maneuvers. Heavy pedestrian traffic. Signed 5' bike lane on right side of street.

- **J Street to O Street**

One way street. Narrow 36 foot roadway. Primarily a residential area with some commercial development. Heavy on-street parking, numerous driveways and intersecting streets. Signed 5' bike lane on right side of street.

- **O Street to Myrtle Avenue**

One way street. Narrow 36 foot roadway. Residential area. Heavy on-street parking and numerous driveways. Signed 5' bike lane on right side of street.

6TH STREET

- **Broadway to J Street**

One way street. 42 foot roadway. Commercial area with heavy on-street parking, numerous driveways and intersecting traffic. Heavy pedestrian traffic. Signed 5' bike lane on right side of street.

- **J Street to O Street**

One way street. 42 foot roadway. Primarily a residential area with some commercial development. Heavy on-street parking, numerous driveways and intersecting streets. Heavy cross traffic. Signed 5' bike lane on right side of street.

- **O Street to Myrtle Avenue**

One way street. 42 foot roadway. Residential area with heavy on-street parking and numerous driveways. Signed 5' bike lane on right side of street.

UNION STREET

- **Wabash Avenue to Harris Street**

Narrow 36 foot roadway. Primarily a residential area with some commercial development. Heavy on-street parking, numerous driveways and intersecting streets. Little League field and playground at Carson Street.

- **Harris Street to South City Limits**

40 foot roadway. Residential area with heavy on-street parking and numerous driveways. Sharp reverse curve at Highland Avenue with restricted visibility. School crosswalk at Highland Avenue. Sharp angle in street at Silva Street. Steep downgrade from Silva Street to city limits. Sharp angle in street at city limits.

WABASH AVENUE

- **Broadway to H Street**

51 foot roadway from Broadway to C Street. Narrows to 43 feet between C and F Streets, then to 39 feet from F to H Streets. Combination of commercial establishments and residences. Very heavy on-street parking, numerous driveways and intersecting streets. Heavy cross traffic. Signed 5' bike lanes on each side of the street from Broadway to C Streets.

WEST AVENUE

- **5th Street to Myrtle Avenue**

48 foot roadway. Commercial area with some undeveloped land. Curving roadway. Heavy cross traffic and turning movements around the shopping center near West Avenue. Restricted visibility leaving Burre Center due to curvature in roadway. Heavy traffic congestion near West Avenue. Pedestrian crosswalk with flashing beacon at Tydd Street. Senior center and residence at Tydd Street.

- **Myrtle Avenue to 14th Street**

40 foot roadway. Primarily a residential area with some commercial development near West Avenue. Heavy on-street parking and numerous driveways. Traffic congestion near West Avenue.

- **14th Street to County Lane**

40 foot roadway. Residential area. Heavy on-street parking, intersecting streets and numerous driveways. Steep hill and reversing curves near County Lane.